MAGNATEX®
Pumps, Inc.

Operation & Maintenance Manual

Mechanical Seal
ANSI Process Pumps

Phone: 713-972-8666
inquiries@magnatexpumps.com
Fax: 713-972-8665
www.magnatexpumps.com

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SECTION A

GENERAL INFORMATION

A.1 PREFACE

Magnatex 3575 Series ANSI Pump is a horizontal overhung, end suction and top discharge with an open impeller, which meets the requirements of ANSI B73.1, fabricated with the best materials and continuous inspection.

With correct installation, periodic inspection, correct usage and careful maintenance, this pump will yield a long satisfactory service life.

⚠ WARNING ⚠

- ✓ Before performing pump maintenance always make sure power to the driver is locked out.
- ✓ Consult either the pump manufacturer or an authorized dealer before changing the pump operation conditions from those under which it was sold.
- ✓ Never operate the pump without its coupling guard installed.
- ✓ Do not use heat to remove impeller or to disassemble the pump, trapped liquid may cause an explosion.
- ✓ Do not operate the pump without proper safety devices installed.
- ✓ Always make sure both the discharge valve and the suction valve are open before operating the pump.
- ✓ Always prime the pump before starting.
- ✓ Piping should not be forced to make connection with the pump.
- ✓ When the system is pressurized, neither vent nor drain valves should be opened, nor should any plugs be removed.
- ✓ Never operate below minimum recommended flow.

A.2 SPECIFICATIONS

VOLUTE: The volute is top centerline with a fully confined gasket. The foot support is used for maximum resistance to misalignment and distortion from piping loads.

However it is important not to impart piping loads on to the pump.

IMPELLER: The impeller is fully open and threaded to the shaft. The threads are sealed by a Teflon O- ring.

Never rotate the pump counter clockwise as the impeller can unscrew and rub on the casing.

STUFFING BOX COVER: Machined for mechanical seal or conventional packing.

FRAME ADAPTER: The ductile iron frame adapter has a machined rabbet fit to the seal chamber / stuffing box cover and a precision dowel pin fit to the bearing frame.

BEARING FRAME: Of rigid iron construction. No machining is required to convert from oil to grease or oil mist lubrication. Flood oil lubrication is standard. The oil level is viewed through a sight glass. The power end is sealed with an Inpro "VBX" labyrinth seal.

SHAFT: Manufactured from 4140 steel with an adjustable bearing and a bolt type roll pin on the shaft end. The 316SS shaft (also available) does not require a sleeve.

BEARING SUPPORT: Constructed of ductile iron, it is rigid and has grooves and openings for oil lubrication, grease or oil mist.

OUTBOARD BEARING: Angularly locked and connected to the shaft and housing to ideal with thrust loads.

INBOARD BEARING: Its rigid, simple design, adequate for high RPM, also requires little attention in service.

NAMEPLATE INFORMATION: Each pump has a nameplate that provides information about the pump, such as pump model, size impeller diameter, construction material, serial number, etc., (Fig 1). The nameplate is located on the bearing frame. When ordering spare parts you will need to identify pump model, size, serial number and the item number of required parts.

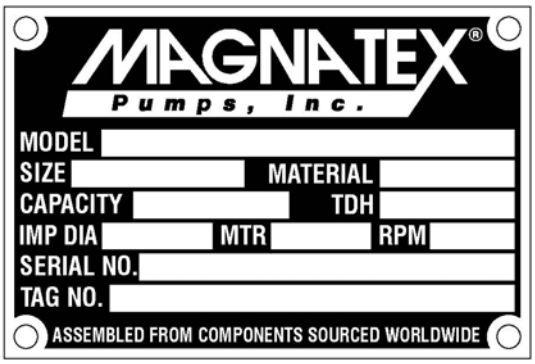


Fig 1

A.3 RECEIVING AND INSPECTING THE PUMP

Please inspect the pump as soon as it is received and check that everything is in order. File any claims with the transportation company. **This is a weighty pump**; lifting equipment must be able to adequately support the entire assembly (Fig 2, 3).

⚠ **DANGER** ⚠

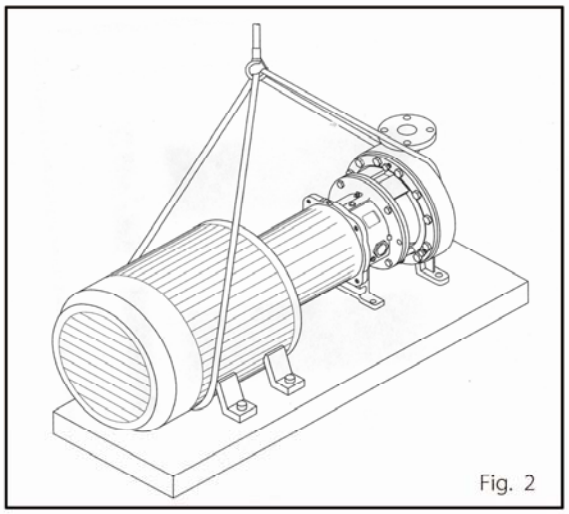


Fig. 2

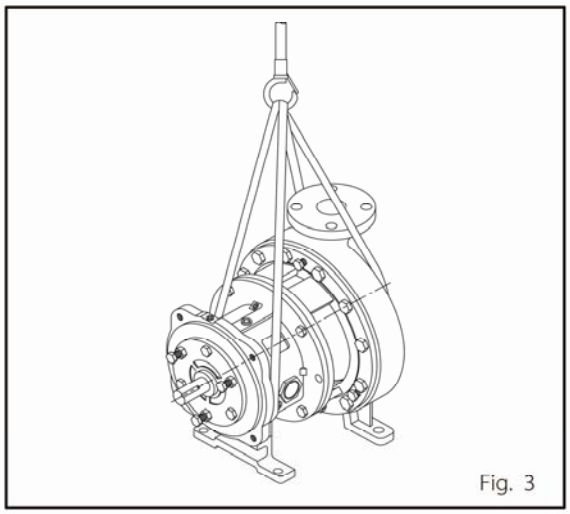


Fig. 3

STORAGE REQUIREMENTS

Proper storage of your MAGNATEX pump will insure that it is ready for service when needed.

GENERAL RULE: Pumps with corrosive fluid application; the process side of the pump should be drained and flushed with water and blown dry using low pressure air flow. After pump is dry a suitable rust preventative should be applied to the interior of the process side of the pump, whenever idle for periods in excess of (1) month or less for humid environments.

For oil lubricated pumps the used oil should be drained and the reservoir filled with fresh oil to the normal operating level. Pumps with sealed grease-lubricated bearings do not require any special attention.

SHORT TERM STORAGE: No special steps are required if the pump is stored indoors in a temperature controlled environment, for less that (6) months. Follow general rule, and rotate the pump shaft several times every 3 months.

LONG TERM STORAGE: In excess of (6) months, all machined surfaces and bearing must be treated with a rust preservative. Rotation of the shaft will be required every 3 months. Refer to coupling and driver manufacturer to comply with their recommended long term storage procedures. Unit must be stored in a covered and dry location. For specific recommendations regarding your storage conditions contact MAGNATEX Pumps.

SECTION B

PUMP INSTALLATION

A pump should be located near the supply of liquid and have adequate space for operation, maintenance and inspection.

B.1 FOUNDATION AND BASEPLATE ALIGNMENT

FOUNDATION

Baseplate mounted pumps are normally grouted on a concrete foundation, which has been poured on a solid footing; foundation bolts commonly used are J – type and sleeve – type. Both designs permit movement for final bolt adjustment.

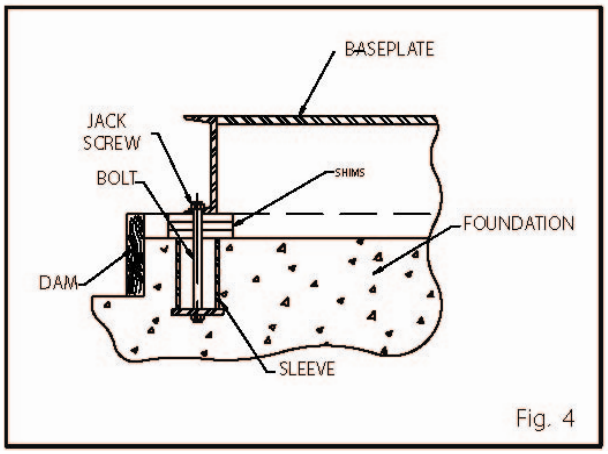


Fig. 4

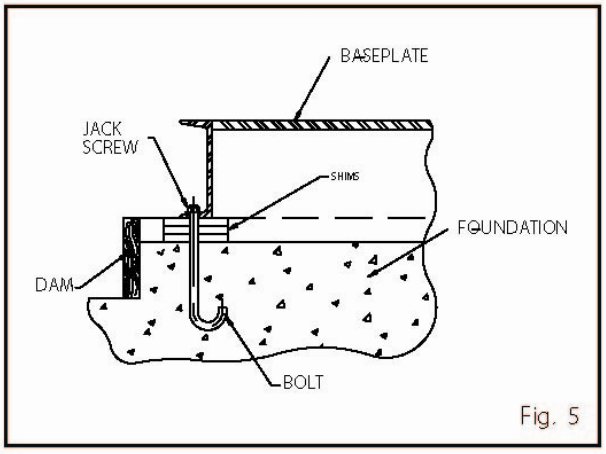


Fig. 5

LEVEL BASEPLATE

A. Place one set of wedges or shims on each side of every foundation bolt. The wedges should extend between ¾" and 1 ½" above foundation to allow for adequate grouting.

B. Remove liquid and / or debris from anchor bolt holes/sleeve before grouting. If the sleeve type bolts are being used, fill the sleeves with packing or rags to prevent grout from entering.

C. Lower Baseplate on to foundation bolts.

D. Level Baseplate to within 1/8" over length of the Baseplate and to within 1/16" over the width of the base by adjusting the wedges.

E. Hand tighten the bolts.

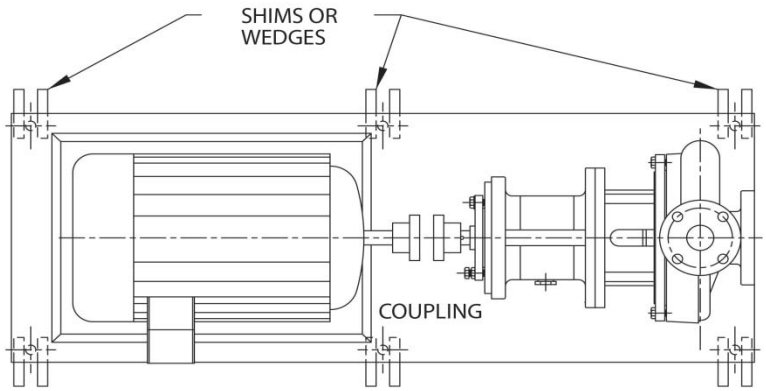


Fig. 6

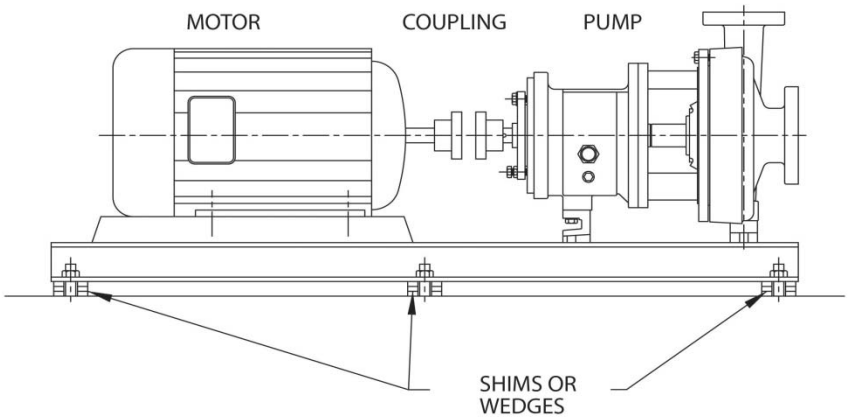


Fig. 7

B.2 ALIGNMENT

INITIAL ALIGNMENT CHECKS: (Done prior to operation)

- ✓ Check before grouting the Baseplate to be sure correct alignment is possible.
- ✓ Check after Baseplate is grouted to see if grouting process has altered alignment.
- ✓ After pipes are connected, check to see if strained connections have altered alignment. If so, eliminate piping strain to achieve optimal alignment.

FINAL ALIGNMENT:

- ✓ Alignment should be checked after first run when both pump and driver are at operating temperature.
- ✓ Alignment should be checked periodically in accordance with plant operating procedures.
- ✓ Good alignment should be checked periodically in accordance with plant operating procedures.
- ✓ Good alignment is achieved when the dial indicator readings are 0.002 in or less.

SECTION C

PREPARATION FOR START-UP

⚠ DANGER ⚠

Make sure driver power is locked out.
Failure to lock out driver power may result in serious physical injury.

C.1 CHECKING ROTATION

1. Make sure coupling hubs are securely fastened to shafts.
2. Jog driver just long enough to determine direction of rotation. Rotation must correspond to arrow on bearing housing.

⚠ CAUTION ⚠

Serious damage may result if pump is run in the wrong rotation.

3. Make sure to leave power turned off to the driver.

C.2 CHECK IMPELLER CLEARANCE

Before starting the pump the impeller clearance must be checked. The pump efficiency is maintained when the proper impeller clearance is set. Impeller front clearance is factory set to predetermined limits.

Minimum values for different temperatures appear in the following table. The impeller clearance adjustments are necessary to prevent the impeller from contacting the casing due to differential expansion at higher operating temperatures..

IMPELLER CLEARANCES FOR SERVICE TEMPERATURES			
SERVICE TEMPERATURE °F (°C)	***MAGNATEX 3575 S*** *inches (mm.)*	***MAGNATEX 3575 M & 3575 L*** *inches (mm.)*	***MAGNATEX 3575 M & XL*** *inches (mm.)*
To 200 °F (93°C)	**0.005" (0.13 mm)**	**0.008" (0.20 mm)**	**0.010" (0.26 mm)**
250 °F (93°C -121°C)	**0.007" (0.18 mm)**	**0.010" (0.26 mm)**	**0.010" (0.26 mm)**
300 °F (121°C -149°C)	**0.009" (0.23 mm)**	**0.010" (0.26 mm)**	**0.019" (0.48 mm)**
350 °F (149°C -177°C)	**0.011" (0.28 mm)**	**0.010" (0.26 mm)**	**0.021" (0.53 mm)**

SECTION D

PUMP START-UP

D.1 STARTING PUMP

1. Ensure that suction valve and any recirculation or cooling lines have been opened.

2. Completely close or partially open discharge valve as determined by system conditions. Never open discharge valve more than 25% on startup.

3. Start driver. Observe pressure gauges. Stop driver if discharge pressure is not attained quickly. Re-prime and attempt to restart.

4. Open discharge valve slowly until the desired flow is obtained. If normal levels of vibration, bearing temperature and noise are exceeded, shut the pump down and resolve the problems.

5. To prevent damage resulting from cavitation or recirculation always operate the pump at or near the rated conditions.

6. If the specific gravity is greater than originally assumed or the rated flow rate is exceeded the driver could overload. The following table shows minimum recommended flows.

7. Always change capacity by regulating the valve in the discharge line. Never throttle flow from the suction side, which can cause cavitation and serious damage to the pump.

D.2 OPERATING MAGNATEX 3575 PUMP AT REDUCED CAPACITY

⚠ CAUTION ⚠

Do not operate pump below minimum rated flows or with suction and/or discharge valve closed. These conditions could cause an explosive hazard due to vaporization of pumpage and can rapidly lead to pump failure and physical injury.

RECOMMENDED MINIMUM FLOW FOR MAGNATEX 3575 SERIES PUMPS
GPM |M^3hr| MAX.IMP.DIA

SIZES	*MODEL*	*60HZ 3560 RPM*		*50HZ 2900 RPM*		*60HZ 1780 RPM*		*50HZ 1470 RPM*		*60HZ 1180 RPM*		*50HZ 960 RPM*	
1 x 1-1/2 - 6	MAGNATEX 3575S	10	2.3	5	1.1	3	0.66	1	0.24				
1-1/2 x 3 - 6		20	4.6	9	2.1	5	1.1	2	0.48				
2 x 3 - 6		40	9.1	25	5.9	9	2.1	3	0.66				
1 x 1-1/2 - 8		20	4.6	13	2.9	5	1.1	2	0.48				
1-1/2 x 3 - 8	MAGNATEX 3575S & 3575L	40	9.1	23	5.2	6	1.3	2	0.48				
3 x 4 - 7		125	28.4	76	17.7	13	2.9	4	0.96				
2 x 3 - 8		60	13.6	35	7.9	9	2.1	4	0.96				
3 x 4 - 8		N/A		180	41.1	100	22.7	31	7.1	17	3.8		
3 x 4 - 8G		190	43.1	104	23.6	26	5.9	11	2.5				
1 x 2 - 10		40	9.1	22	4.9	5	1.1	3	0.66	3	0.66		
1-1/2 x 3 -10		80	18.2	56	12.7	14	3.2	6	1.3	5	1.1		
2 x 3 -10		200	45.4	73	16.6	19	4.3	6	1.3	3	0.66		
3 x 4-10		200	45.4	181	41.1	50	11.3	20	4.6	12	2.7		
3 x 4 - 10H		N/A		N/A		150	34.1	76	17.3	30	6.8	6	1.4
4 x 6 - 10		N/A		N/A		450	27.1	117	26.6	79	17.9	24	5.5
4 x 6 - 10H		N/A		N/A		400	90.8	153	34.7	85	19.3	46	10.4
1-1/2 x 3 -13		180	40.9	401	91.1	45	10.2	23	5.2	11	2.5		
2 x 3 - 13		240	54.5	647	146.9	63	14.3	37	8.4	18	4.1		
3 x 4 - 13		400	90.8	333	75.6	168	38.2	104	23.6	67	15.2	31	7.1
4 x 6 - 13		N/A		N/A		370	84.1	297	67.4	150	34.1	89	20.2
6 x 8 - 13	MAGNATEX 3575XL	N/A		N/A		850	193.1	480	109.1	375	85.1	197	44.8
8 x 10 - 13		N/A		N/A		1200	272.5	975	221.4	570	129.4	383	87.1
6 x 8 - 15		N/A		N/A		1000	227.1	726	164.9	462	104.9	277	62.9
8 x 10 - 15		N/A		N/A		N/A		1400	317.9	1000	227.1	769	174.8
8 x 10 - 15G		N/A		N/A		1400	317.9	1375	312.2	847	192.4	603	137.2

Section E

PUMP DISASSEMBLY

⚠ CAUTION ⚠

To Prevent Injury

- ✓ Power to the driver should be locked out to prevent accidental startup.
- ✓ Pump operator should be familiar with all safety precautions.
- ✓ Protective equipment should always be worn in case pump is handling fluids that are hazardous and/or toxic.
- ✓ Proper lifting methods should be employed when handling pump components.
- ✓ Heavy work gloves should be worn when handling impellers as they have sharp edges.
- ✓ Suction and discharge valves should remain open during operation.
- ✓ All replacement parts should be available (see below).

E.1 RECOMMENDED SPARE PARTS

- Impeller
- Shaft sleeve
- Shaft
- Outboard bearing
- Inboard bearing
- Inboard labyrinth seal
- Outboard labyrinth seal
- Gland stud nut
- Bearing lock washer
- Volute gasket
- O- Ring bearing housing
- Gasket – frame to adapter
- Stuffing box packing
- O- Ring impeller

E.2 REQUIRED TOOLS

- Wrenches 7/16”, ½”, 9/16”, ¾”, 7/8”, and 15/16”
- Screwdriver
- Pliers
- Rubber mallet
- Allen wrenches
- Snap-ring pliers
- Micrometer
- Dial indicator
- Bearing puller
- Brass drift punch
- Lifting sling
- Induction bearing heater
- Torque wrench
- Heavy work gloves
- Cleaning agents
- Feeler gauges

E.3 DISASSEMBLY

Step 1 **-** Drain all liquid from pump and flush if necessary. Disconnect all auxiliary piping and tubing.

Step 2 **-** Remove coupling guard and disconnect coupling.

Step 3 **-** If oil-lubricated; drain oil from bearing frame by removing bearing frame drain plug.

(Oil should be saved for analysis to assist preventative maintenance.)

Replace plug after oil is drained.

Step 4 **-** Remove casing bolts and frame foot bolts.

Step 5 **-** Carefully remove back pull-out assembly (requires assistance).

Step 6 **-** Remove jack screws.

Step 7 **-** Remove volute gasket and discard. (Replace with new gasket during re-assembly.)

Step 8 **-** Frame adapter should be secured to workbench.

Step 9 **-** Remove coupling hub.

Step 10 **-** Removal of impeller:

⚠ DANGER ⚠

Wear heavy work gloves to prevent injury from sharp edges!

- ✓ Remove impeller.
- ✓ Slide shaft wrench over the shaft and key.
- ✓ Looking from the impeller end of the shaft, rotate the impeller clockwise, raising the wrench off the work surface.
- ✓ Now turn it quickly back the other way, banging the wrench handle on the workbench or a solid block until impeller comes loose.

Step 11 **-** Remove volute gasket and discard. (Replace with new gasket during re-assembly.)

Step 12 **-** Remove seal chamber/stuffing box cover.

Step 13 **-** Remove seal gland/packing stuffing box

Step 14 **-** Remove the shaft sleeve.

Step 15 **-** Remove packing and lantern ring from the stuffing box cover.

Step16 **-** Remove the frame adapter by removing the dowel pins and bolts.

Step 17 **-** Discard gaskets (replace with new ones during reassembly).

Step 18 **-** Remove inboard labyrinth oil seal

Step 19 **-** Disassemble power end

- ✓ Remove clamp screws, and begin to tighten jack screws to start the housing out of the bearing frame.
- ✓ Slide shaft assembly out of bearing frame.
- ✓ Remove the jack screw with nuts.
- ✓ Remove bearing housing O-Ring and bearing retaining snap ring.
- ✓ Remove bearing housing from shaft.
- ✓ From the bearing housing, remove the outboard labyrinth seal and O-Rings.
- ✓ From the shaft, remove the bearing locknut and washer, inboard bearing, and outboard bearing.

Step 20 **-** Remove all plugs from bearing frame, unbolt the feet, and remove.

SECTION F

PUMP ASSEMBLY

All pumps parts should be inspected before reassembly. Check that all parts are clean before assembly.

F.1 ASSEMBLY OF BEARING FRAME

Step 1 **–**Install all threaded plugs in bearing frame (sight oiler plug, for oil mist connection plug, oil fill plug, oil drain plug, relief plug and oil cooler inlet and outlet plugs.

Step 2 **–**Install bearing frame foot and bolts, hand tighten.

F.2 ASSEMBLY OF ROTATING ELEMENT

Step 1 **–**For the models 3575S and 3575M: Install outboard bearing on shaft. Coat internal surfaces of bearings with lubricant that will be used in the pumps operations.

The inboard bearing is installed with the shield away from impeller.

For model 3575L: Install outboard bearing on shaft. For proper installation please check SKF catalog. Coat the internal surfaces of bearings with lubricant that will be used in pump operation.

Step 2 **–**Place lock washer on shaft and tang of lock washer in keyway of shaft.

Step 3 **–**Thread locknut onto shaft. Tighten locknut until tight. Bend washer tang aligning with slot of lock washer into the slot of locknut.

Step 4 **–**For models 3575S and 3575M: Place bearing retaining ring for impeller end to outboard bearing. This bearing retaining ring is grooved; the flat face should be towards outboard bearing.

For the model 3575L: Place bearing clamp ring over shaft (Note orientation).

Step 5 **–**Install inboard bearing on shaft. Before installing, coat internal surfaces of the bearings with the lubricant to be used in pump operation.

Step 6 **–**Install a new o-ring in bearing housing.

Step 7 **–**Coat outside of outboard bearing and inside of bearing housing with oil.

Step 8 **–**Install the shaft/bearing assembly in the bearing housing.

Step 9 **–**For model 3575S and 3575M: Secure the retaining ring in groove. Check that the groove in the bearing frame is not blocked by the retaining ring.

Step 10 –Check that the shaft turns freely.

Step 11 –Before installing the outboard labyrinth seal, make sure that the grooved edges on the shaft are smooth in order to protect outboard labyrinth seal packing.

Step 12 –Install outboard labyrinth seal in bearing housing with packing adjustment type "O". The groove for oil drainage must be oriented downwards.

Step 13 –Lubricate the outer track of the bearing housing, the inboard bearing and inner track of the bearing frame with the oil to be used during the pump operation.

Step 14 –Install shaft assembly into frame. Check that the shaft turns freely.

Step 15 –Position the bearing housing in the bearing frame. Align the word "top" the upper portion of the bearing frame. Tighten the leveling screws and nuts by hand.

Step 16 –Once the rotating element is installed in the bearing frame, place a dial indicator on the end of the shaft. Move shaft forward and backward to check axial movement.

MAGNATEX 3575 SERIES SHAFT END PLAY in. (mm)					
		3575S	**3575M**	**3575L**	**3575XL**
Double row	min	0.0011(.028)	0.0013(.033)	N/A	0.0014(.036)
	max	0.0019(.047)	0.0021(.054)		0.0023(.058)
Duplex	min	*0.0007(.012)	*0.0009(.022)	0.0010(.026)	*0.0010(.026)
	max	0.0010(.026)	0.0012(.030)	0.0015(.038)	0.0015(.038)

Step 17 – Check shaft/sleeve run out. Install the shaft sleeve, if used, and then hand tighten impeller. Rotate shaft 360 degrees. Disassemble and determine cause if the total indicator reading is greater than 0.002 in.

Step 18 – Check frame face run out. Rotate shaft so indicator rides along the fit for 360 °.

If the total indicator reading is more than 0.001 in (0.025 mm) disassemble and troubleshoot.

Step 19 – Install the gasket on the frame.

Step 20 – Install the frame adapter onto frame assembly aligning bolt holes and dowel locations with the frame.

Step 21 – Install dowel pins and bolts.

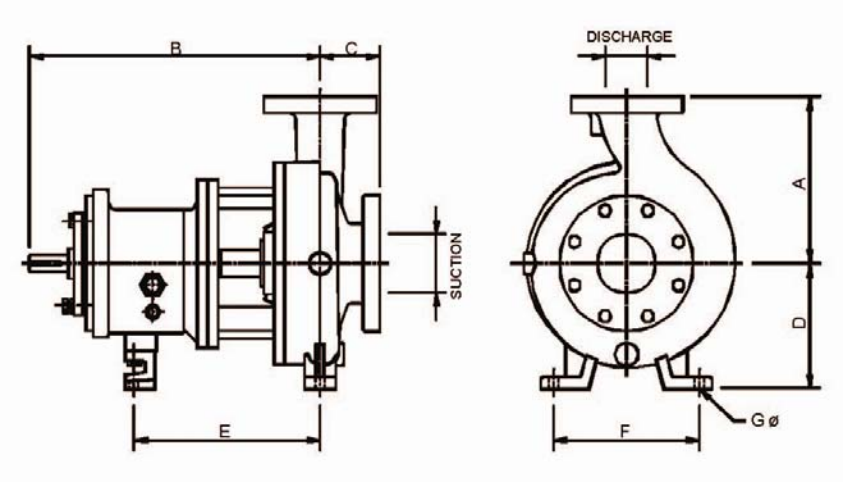
Step 22 – Check adapter to determine if the total indicator reading is within tolerance.

Step 23 – Install inboard labyrinth oil seal into adapter/bearing frame in the 6 o'clock position.

SECTION G

PUMP DRAWINGS

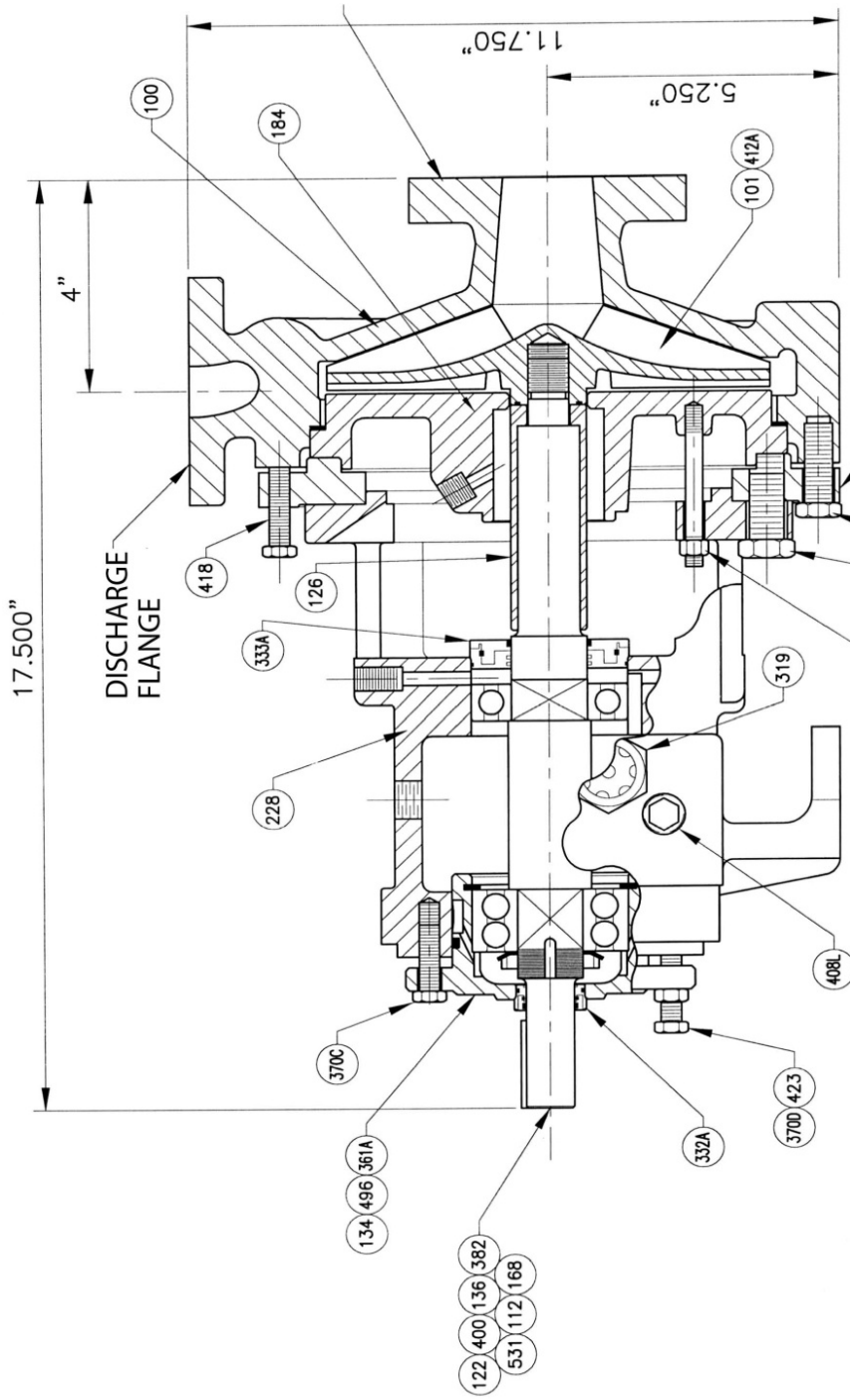
G.1 DIMENSIONAL DRAWING MAGNATEX 3575 SERIES PUMPS



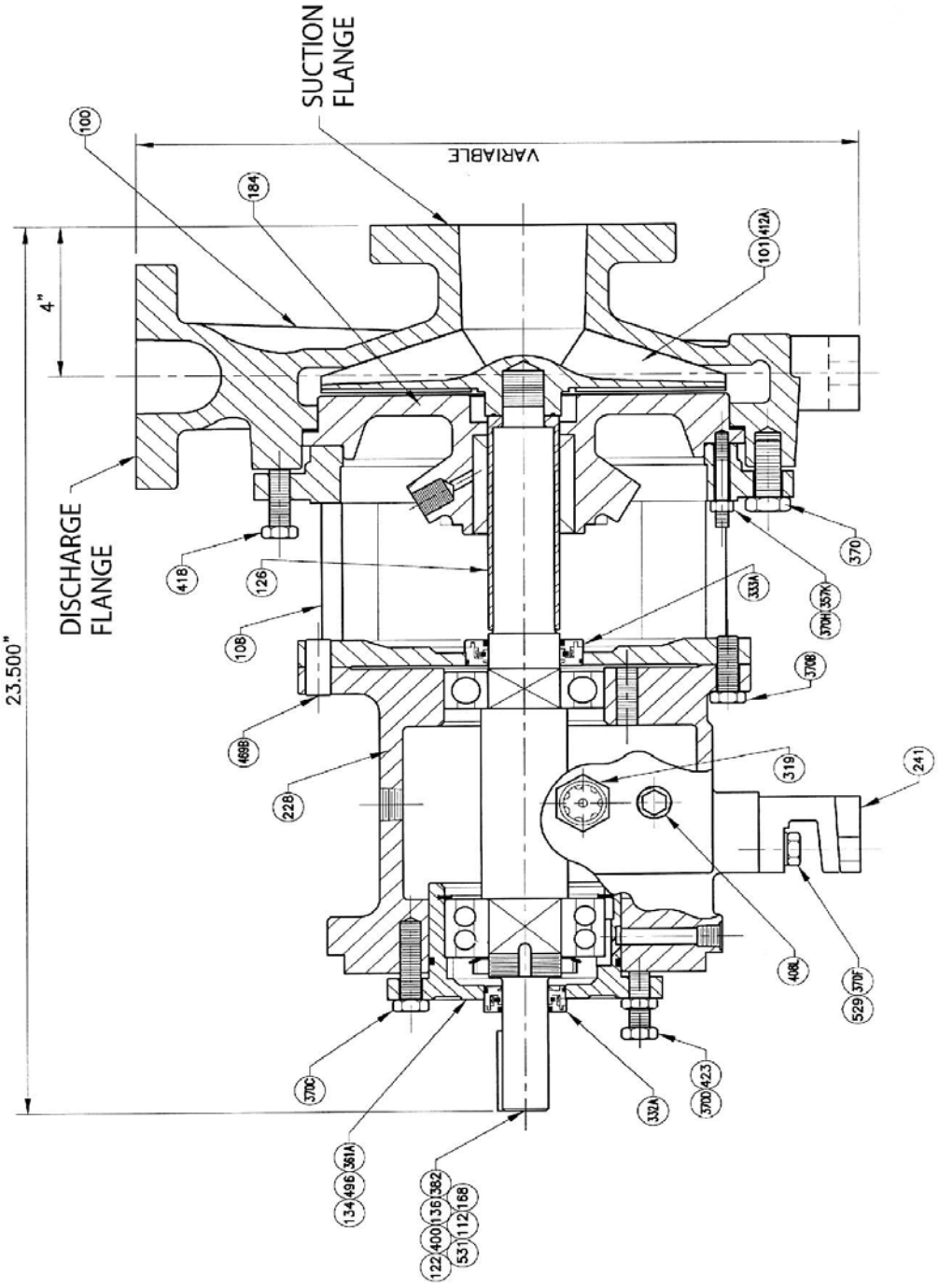
GENERAL DIMENSION

FRAME	*SIZE*	*ANSI DESIGNATION*	*DISCHARGE SIZE*	*SUCTION SIZE*	*A*	*B*	*C*	*D*	*E*	*F*	*BORE*	*WEIGHT*
					DIMENSIONS IN INCHES (CENTIMETERS)							*LBS (kgs.)*
MAGNATEX 3575S	1x 1-1/2 – 6	AA	1	1.5	6.5 (16.5)	13.5 (34.3)	4 (10.2)	5.25 (13.3)	7.25 (18.5)	6 (15.2)	.625 (1.58)	84 (38)
	1-1/2 x 3 – 6	AB	1.5	3								42 (92)
	2 x 3 – 6		2	3								43 (95)
	1 x 1-1/2 – 8	AA	1	1.5							.563 (1.43)	45 (100)
	1-1/2 x 3 – 8	A8	1.5	3								49 (108)
MAGNATEX 3575M & 3575L	3 x 4 – 7	A70	3	4	11 (28.0)	19.5 (49.5)		8.25 (21.0)	12.5 (31.8)	9.75 (24.7)	.625 (1.58)	100 (220)
	2 x 3 – 8	A60	2	3	9.5 (24.2)							200 (91)
	3 x 4 – 8	A70	3	4	11 (28.0)							200 (100)
	3 x 4 – 8G	A70	3	4								
	1 x 2 – 10	A05	1	2	8.5 (21.6)							220 (91)
	1-1/2 x 3 –10	A50	1.5	3								220 (100)
	2 x 3 –10	A60	2	3	9.5 (24.2)							230 (104)
	3 x 4–10	A70	3	4	11 (28.0)							265 (120)
	3 x 4 – 10H	A40	3	4	12.5 (31.8)			10 (25.4)				305 (138)
	4 x 6 – 10	A80	4	6	13.5 (34.3)							305 (138)
	4 x 6 – 10H	A80	4	6								
	1-1/2 x 3 –13	A20	1.5	3	10.5 (26.7)							245 (111)
	2 x 3 – 13	A30	2	3	11.5 (29.2)							275 (125)
	3 x 4 – 13	A40	3	4	12.5 (31.8)							330 (150)
	4 x 6 – 13	A80	4	6	13.5 (34.3)						.563 (1.43)	405 (184)
MAGNATEX 3575XL	6 x 8 – 13	A90	6	8	16 (40.6)	27.9 (70.8)	6 (15.2)	14.5 (36.8)	18.75 (47.6)	16 (40.6)	.875 (2.22)	560 (254)
	8 x 10 – 13	A100	8	10	18 (45.7)							670 (304
	6 x 8 – 15	A110	6	8								610 (277)
	8 x 10 – 15	A120	8	10	19 (48.3)							740 (336)
	8 x 10 – 15G	A129	8	10								322 (710)

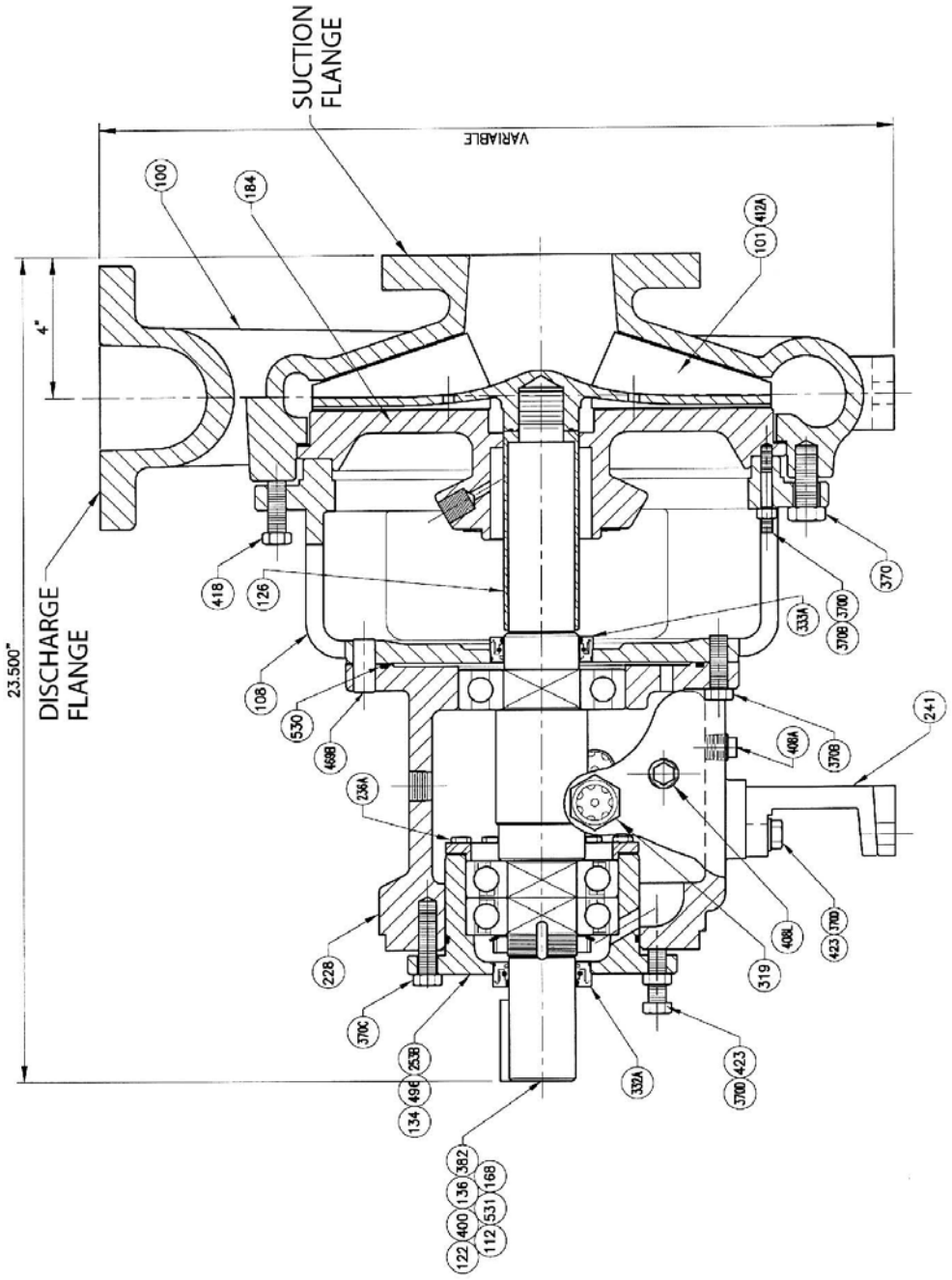
G.2 SECTIONAL DRAWING, MAGNATEX 3575S



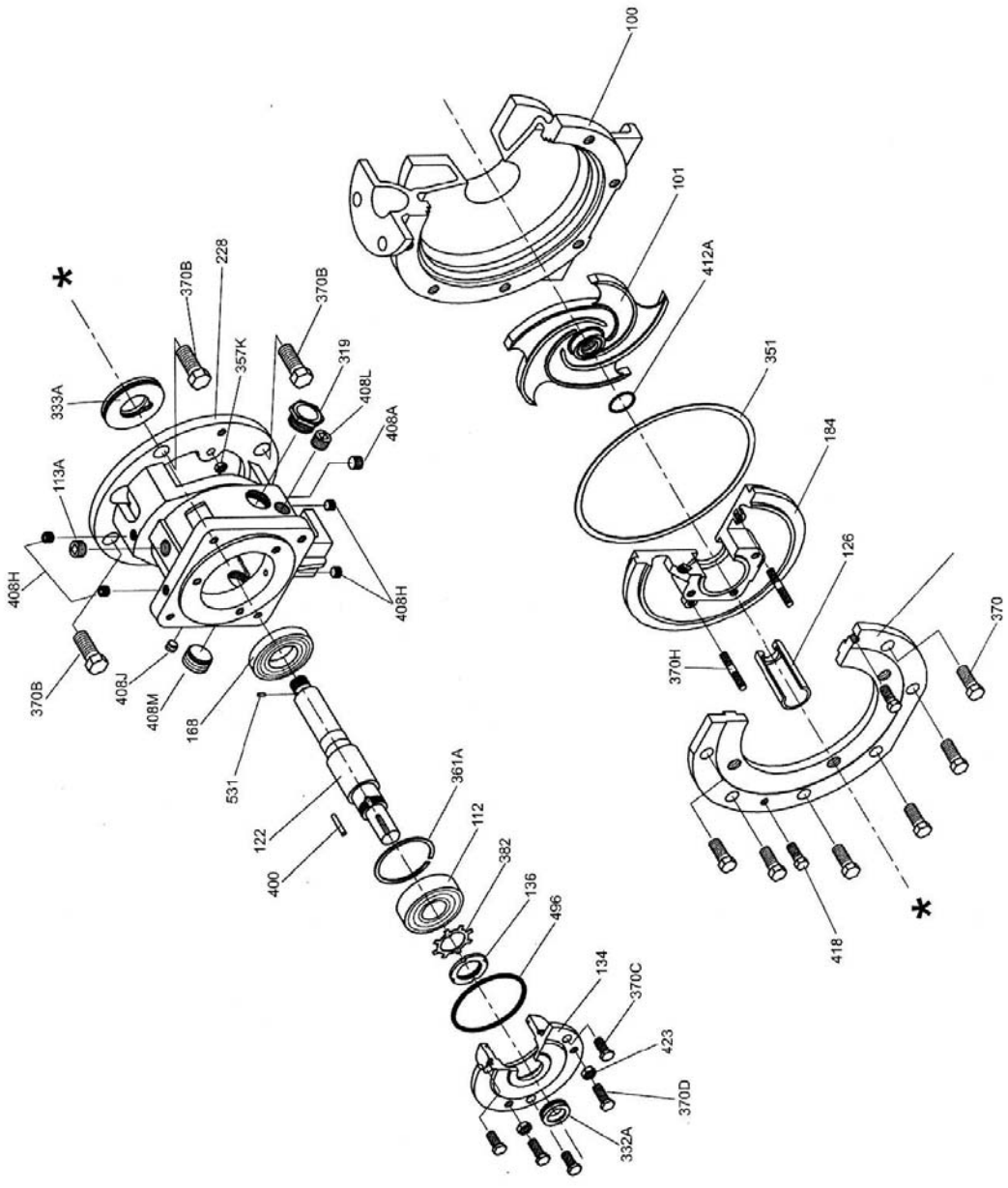
G.3 SECTIONAL DRAWING, MAGNATEX 3575M



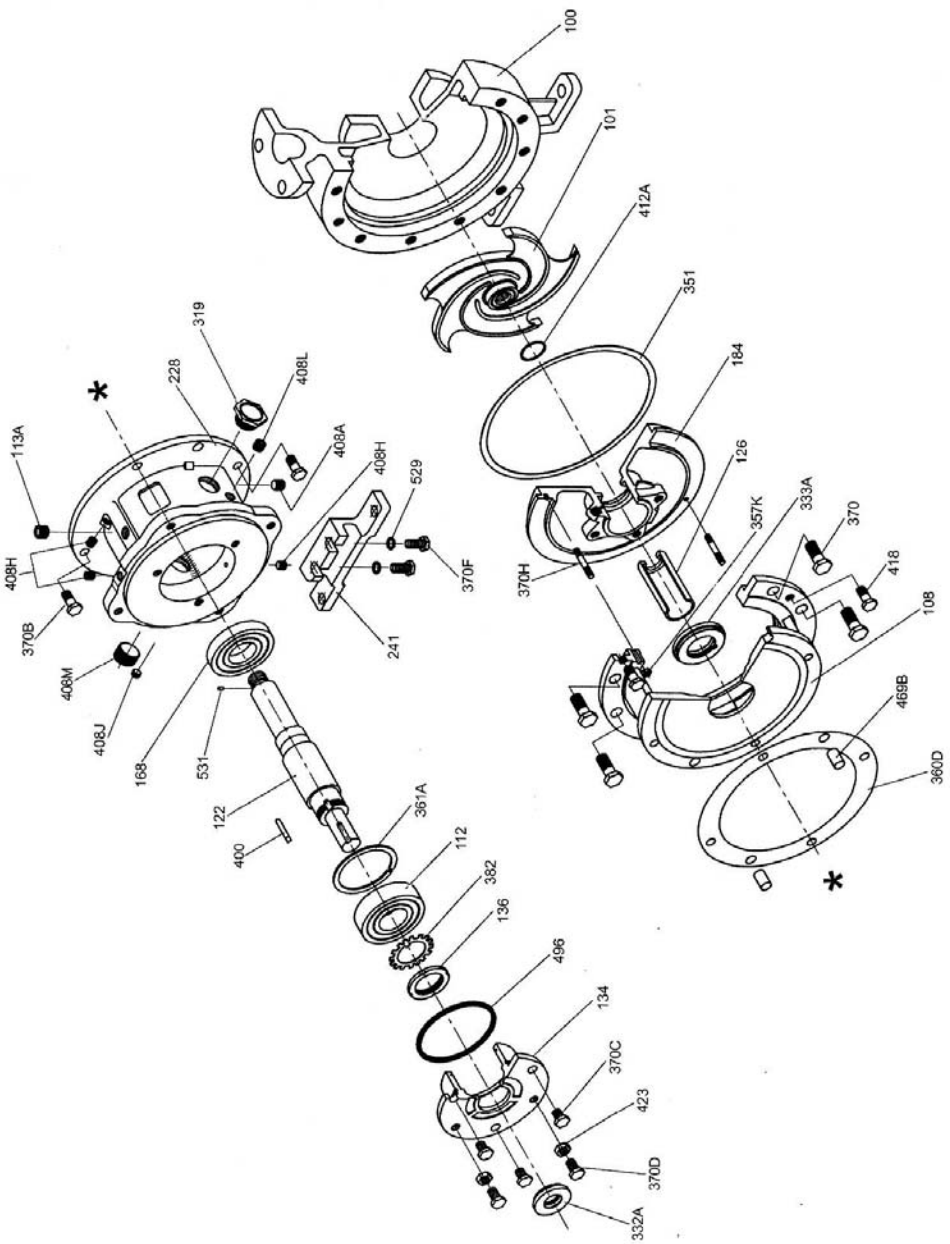
G.4 SECTIONAL DRAWING, MAGNATEX 3575L



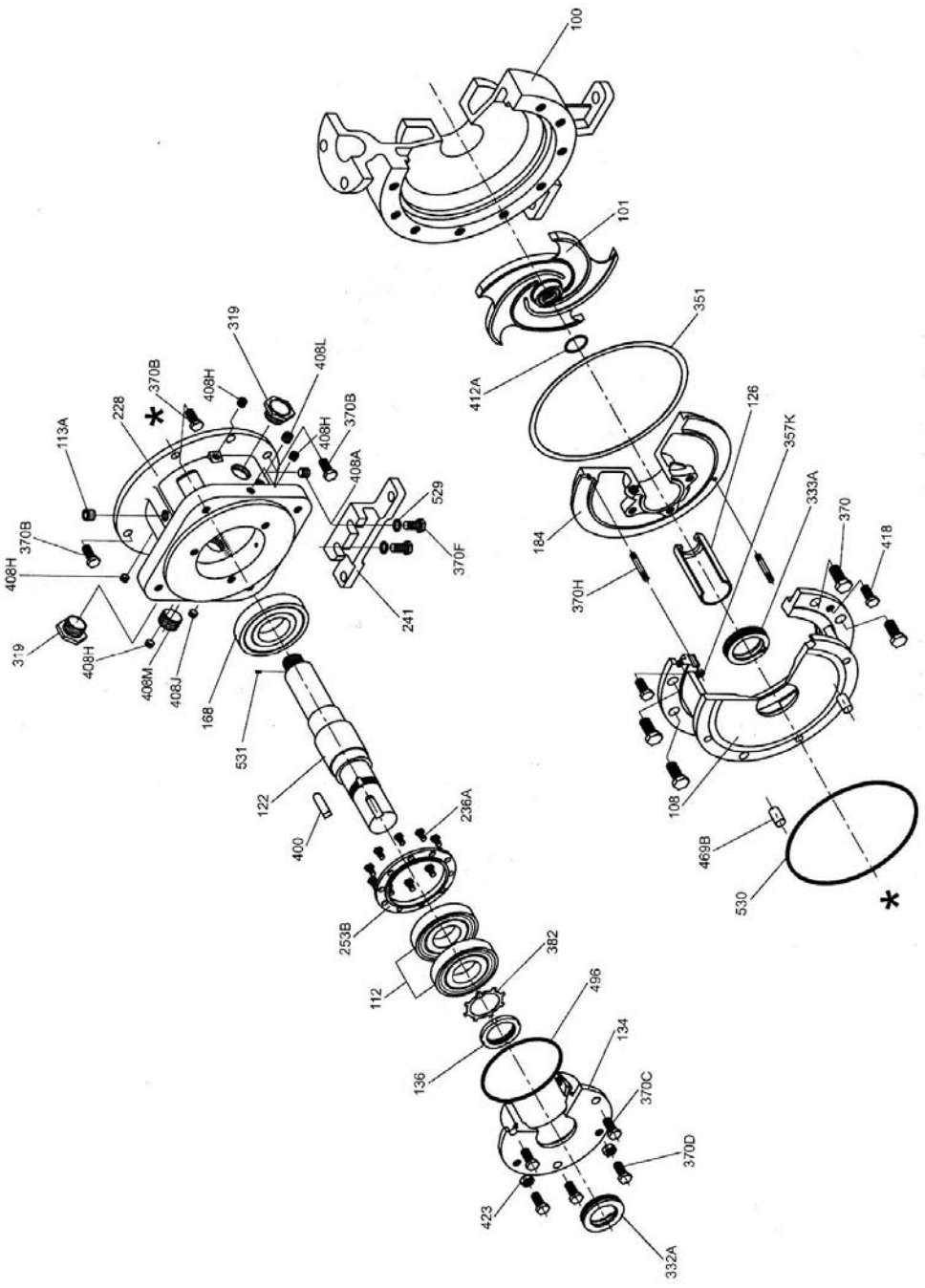
G.5 EXPLODED DRAWING, MAGNATEX 3575S



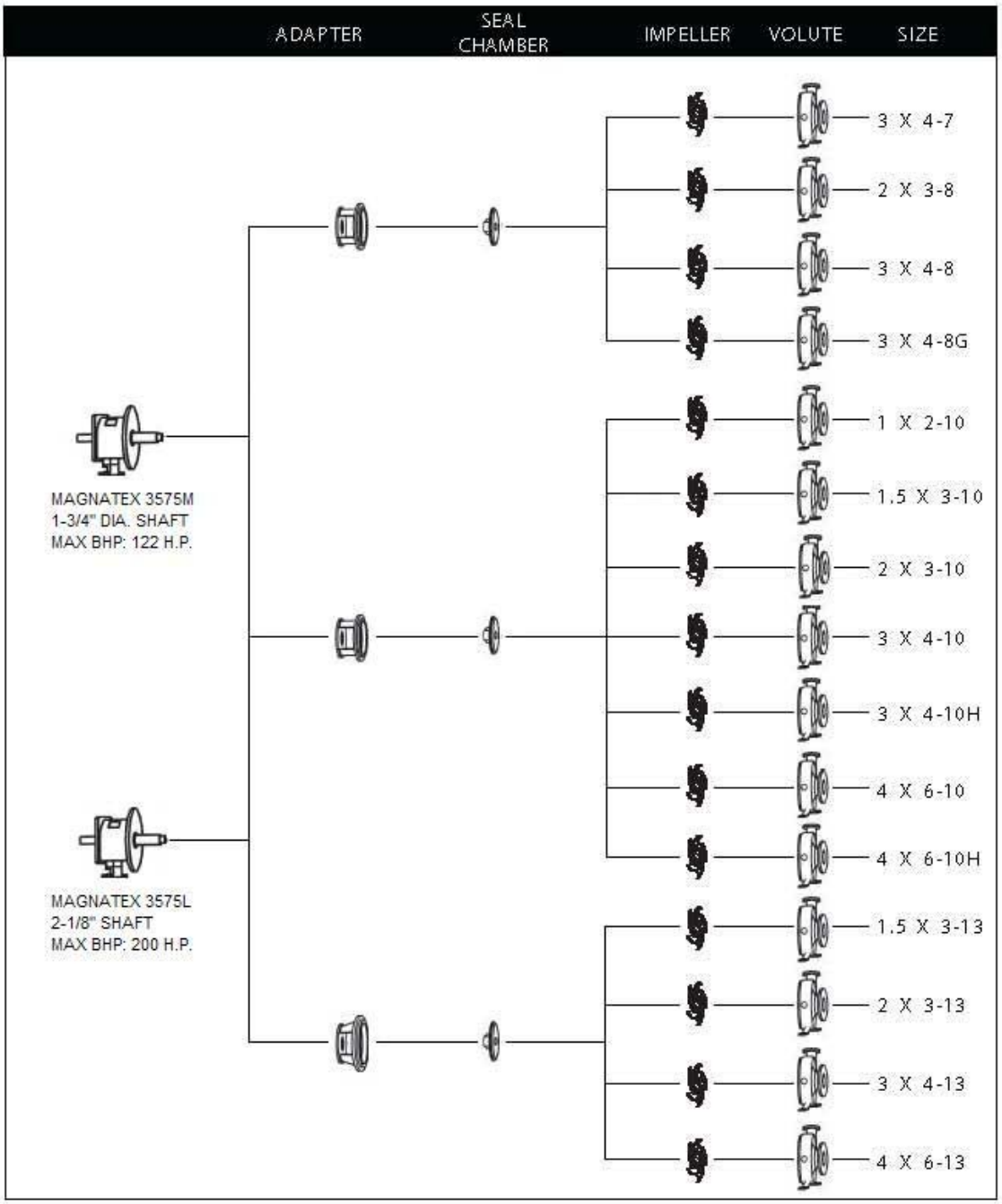
G.6 EXPLODED DRAWING, MAGNATEX 3575M



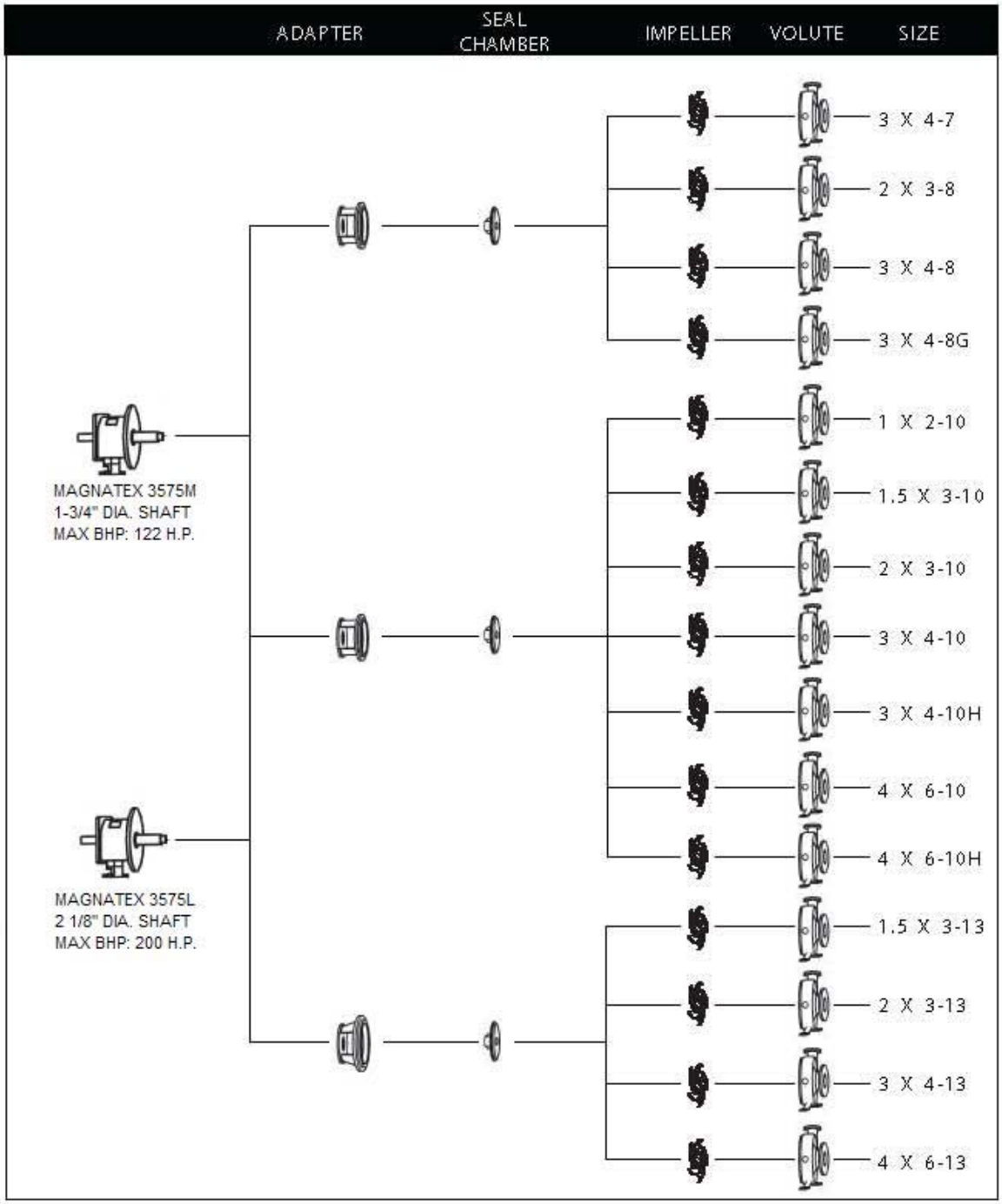
G.7 EXPLODED DRAWING, MAGNATEX 3575L



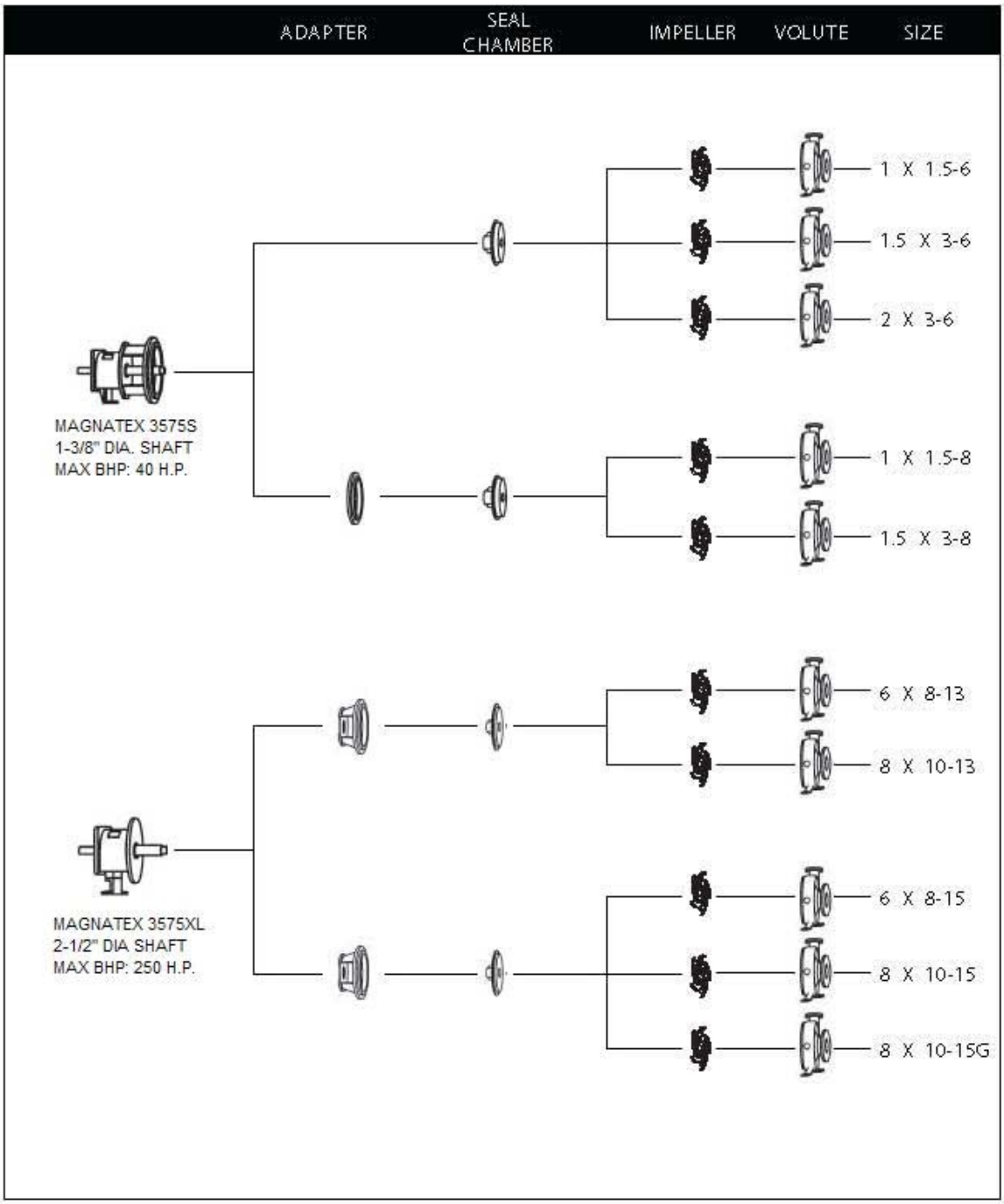
H.1 MODULAR INTERCHANGEABILITY



H.1 MODULAR INTERCHANGEABILITY (cont.)



H.1 MODULAR INTERCHANGEABILITY (cont.)



H.2 PARTS LIST AND MATERIALS OF CONSTRUCTION

ITEM	QTY PER PUMP	PART NAME	DUCTILE IRON	DUCTILE IRON WITH 316SS IMP	316SS	ALLOY 20	CD4MCu	MONEL	HASTELOY B&C
100	1	VOLUTE	DUCTILE IRON	DUCTILE IRON	316SS	ALLOY 20	CD4MCu	MONEL	B&C
101	1	IMPELLER	DUCTILE IRON	316SS	316SS	ALLOY 20	CD4MCu	MONEL	B&C
105	1	LANTERN RING	TEFLON						
106	1	STUFFING BOX PACKING	TEFLON						
107	1	GLAND	316SS			ALLOY 20		MONEL	B&C
108	1	FRAM ADAPTER	DUCTILE IRON						
112	1	THRUST BEARING	DOUBLE ROW ANGULAR CONTACT						
113A	1	PLUG – OIL FILL	CARBON STEEL						
122	1	SOLID SHAFT NO SLEEVE (OPTIONAL)	316SS						
122	1	SHAFT WITH SLEEVE	SAE - 4140					316SS	
126	1	SHAFT SLEEVE	316SS						
134	1	BEARING HOUSING	DUCTILE IRON						
136	1	BEARING LOCKNUT	STEEL						
168	1	RADIAL BEARING	SINGLE ROW DEEP GROVE						
184	1	SEAL CHAMBER/STUFFING BOX COVER	DUCTILE IRON		316SS	ALLOY 20	CD4MCu	MONEL	B&C
228	1	BEARING FRAME	DUCTILE IRON						
236A	10	CAP SCREW	CARBON STEEL						
241	1	FRAME FOOT	DUCTILE IRON						
236A	1	OIL DEFLECTOR	CARBON STEEL						
250	1	GLAND MECHANICAL SEAL	316SS			ALLOY 20			
253B	1	BEARING CLAMP RING	CARBON STEEL						
319	1	OIL SIGHT GLASS	GLASS /STEEL						
332A	1	OUTBOARD LABYRINTH SEAL	BRONZE WITH VITON O-RINGS						
333A	1	INBOARD LABYRINTH SEAL	BRONZE WITH VITON O-RINGS						
351	1	CASING GASKET	ARAMID FIBRE WITH EDPM						
353	2	GLAND STUD	316SS						
355	2	GLAND STUD NUT	304SS						
357K	2	PLUG	304SS						
358A	1	CASING DRAIN PLUG (OPTIONAL)	CARBON STEEL		316SS	ALLOY 20	CD4MCu	MONEL	B&C
360D	1	GASKET – FRAME ADAPTER	VELLUMOID						
360Q	1	GASKET	ARAMID FIBRE WITH EDPM						
361A	1	RETAINING RING	STEEL						
370	*	BOLT – ADAPTER TO CASING	CARBON STEEL						
370B	4	BOLT – FRAME TO ADAPTER	CARBON STEEL						
370C	3	CLAMP BOLT – BEARING HOUSING	CARBON STEEL						
370D	3	JACK BOLT – BEARING HOUSING	CARBON STEEL						
370F	2	BOLT – FRAME FOOT TO FRAME	CARBON STEEL						
370H	2	STUD – STUFFING BOX COVER TO ADAPTER	316SS						
382	1	LOCK WASHER – BEARING	STEEL						
408A	1	PLUG – OIL DRAIN	STEEL						
408H	4	PLUG – OIL MIST CONNECTION	STEEL						
408J	1	PLUG OILER	STEEL						
408L	1	PLUG – OIL COOLER INLET	STEEL						
408M	1	PLUG – OIL COOLER OUTKLET	STEEL						
412A	1	O-RING – IMPELLER	TEFLON						
418	3	JACKBOLT – ADAPTER TO CASE	304SS						
423	3	JAM NUT – BEARING HOUSING JACK BOLT	CARBON STEEL						
469B	2	DOWL PIN	1018						
496	2	O-RING – BEARING HOUSING	BUNA-N						
529	2	LOCKWASHER FRAME FOOT TO BEARING FRAME	STEEL						
531	1	PIN	STEEL						

*** QTY MODEL**

4 MAGNATEX 3575S, with impeller diam. 6"ø
8 MAGNATEX 3575M, with impeller diam. 8"ø
8 MAGNATEX 3575L & MAGNATEX 3575M, with impeller diam. 8"ø
12 MAGNATEX 3575L & MAGNATEX 3575M, with impeller diam. 10"ø
16 MAGNATEX 3575L & MAGNATEX 3575M, with impeller diam. 13"ø

SECTION I

MAINTENANCE, OPERATIONS AND REBUILD CHECKLIST

I.1 - OPERATION CHECKS

LUBRICATION

Recommended lubricants:

OIL: ISO VG68 High Quality turbine oil. For pumpage temperatures above 250°F (121°C) use synthetic oil

GREASE: NLGI No.2, sodium or lithium based

MAGNATEX 3575 SERIES OIL SUMP CAPACITY		
Model	**oz.**	**ml.**
3575S	16	475
3575M	42	1250
3575L	48	1425
3575XL	96	2850

MAGNATEX 3575 SERIES RELUBRICATION INTERVALS (OIL)			
Power End Type	**Mineral Oil**	**Synthetic Oil**	**Regreaseable**
Standard	3mo.	6mo.	3mo.
Sealed	3mo.	24mo.	N/A

OPERATING TEMPERATURES

MAGNATEX 3575 SERIES MAXIMUM RECOMMENDED OPERATING TEMPERATURE						
Lubrication	**Mineral Oil**			**Synthetic Oil**		
	Without Cooling	With Finned Tube Oil Cooler	With High Temp. Option	Without Cooling	With Finned Tube Oil Cooler	With High Temp. Option
Flood Oil	350°F (177°C)	500°F (260°C)	700°F (371°C)	450°F (232°C)	500°F (260°C)	700°F (371°C)
Oil Mist	350°F (177°C)	500°F (260°C)	700°F (371°C)	450°F (232°C)	500°F (260°C)	700°F (371°C)
Grease	Up to 350°F (177°C)		Standard Pump With No Modifications			
	350°F to 500°F (177°C to 260°C)		High temperature Grease and Stuffing Box Cooling.			

MAGNATEX 3575 SERIES SHAFT END PLAY in. (mm)					
		3575S	**3575M**	**3575L**	**3575XL**
Double row	min	0.0011(.028)	0.0013(.033)	N/A	0.0014(.036)
	max	0.0019(.047)	0.0021(.054)		0.0023(.058)
Duplex	min	*0.0007(.012)	*0.0009(.022)	0.0010(.026)	*0.0010(.026)
	max	0.0010(.026)	0.0012(.030)	0.0015(.038)	0.0015(.038)

I.2 – IMPELLER CLEARANCE SETTINGS

It is imperative that these procedures for proper impeller clearance are followed. Improper setting of the impeller clearance can result in sparks, greater heat generation and equipment failure.

⚠ WARNING ⚠

Lock out driver power to prevent accidental startup and physical injury

IMPELLER CLEARANCES

MAGNATEX 3575 SERIES IMPELLER CLEARANCES						
Service Temperature	3575S		3575M & 3575L		3575XL	
	inches	mm	inches	mm	inches	mm
-20 to 150°F (-29 to 66°C)	0.005	0.13	0.008	0.20	0.015	0.38
Up to 175°F (79°C)	0.005	0.13	0.008	0.20	0.015	0.38
Up to 200°F (93°C)	0.005	0.13	0.008	0.20	0.015	0.38
Up to 250°F (121°C)	0.006	0.16	0.009	0.23	0.016	0.41
Up to 300°F (149°C)	0.007	0.19	0.010	0.26	0.015	0.44
Up to 350°F (177°C)	0.009	0.22	0.012	0.29	0.015	0.47
Up to 400°F (204°C)	0.010	0.25	0.013	0.32	0.015	0.50
Up to 450°F (232°C)	0.012	0.28	0.014	0.35	0.015	0.53
Up to 500°F (260°C)	0.013	0.30	0.015	0.38	0.015	0.56
Up to 550°F (288°C)	0.014	0.33	0.016	0.41	0.015	0.59
Up to 600°F (316°C)	0.015	0.36	0.017	0.44	0.015	0.62
Up to 650°F (343°C)	0.016	0.39	0.019	0.47	0.015	0.65
Up to 700°F (371°C)	0.017	0.42	0.020	0.50	0.015	0.68

DIAL INDICATOR METHOD

1. Remove coupling guard.
2. Remove coupling.
3. Set dial indicator to contact coupling face or shaft end.
4. Loosen locking bolt by backing bolts out several turns
5. Loosen jam nuts on the jack bolts, evenly turn jack bolts until impeller contacts the stuffing box or seal chamber. Slowly turn shaft to verify that contact has been made.

6. Zero out dial indicator.

7. Evenly back off each jack bolt and tighten locking bolts to move the impeller away from the stuffing box cover or seal chamber until the dial indicator reads a .060” clearance.

8. Evenly turn jack bolts and tighten jam nuts.

9. Verify shaft turns freely.

10. Install Coupling.

11. Install Coupling guard.

FEELER GAUGE METHOD

1. Remove coupling guard.

2. Remove coupling.

3. Loosen jam nuts on the jack bolts, evenly turn jack bolts until impeller contacts the stuffing box or seal chamber. Slowly turn shaft to verify that contact has been made.

4. Using feeler gauges measure gap between the bearing housing and the bearing frame for .060” clearance.

5. Evenly back off each jack bolt and tighten locking bolts to move the impeller away from the stuffing box cover or seal chamber until the dial indicator reads a .060” clearance.

6. Evenly turn jack bolts and tighten jam nuts.

7. Verify shaft turns freely.

8. Install Coupling.

9. Install Coupling guard.

ALIGNMENT - Coupling to be aligned to within 0.002in. T.I.R. for both parallel and angular readings.

VIBRATION - Maximum Vibration Level 0.25in/sec unfiltered at inboard and outboard bearing location.

TEMPERATURE – Normal Power End operating temperature 120 to 180°F (50 to 82°C)

I.3 – REBUILD CHECKS

BEARING FIT AND TOLERANCES

MAGNATEX 3575 SERIES BEARING FIT AND TOLERANCES				
MODEL	**3575S in.(mm)**	**3575M in.(mm)**	**3575L in.(mm)**	**3575XL in.(mm)**
SHAFT O.D. INBOARD	1.3785 (35.013) 1.3781 (35.002)	1.7722 (45.013) 1.7718 (45.002)	2.1660 (55.015) 2.1655 (55.002)	2.5597 (65.015) 2.5592 (65.002)
	0.0010 (0.025) TIGHT 0.0001 (0.002) TIGHT	0.0010 (0.025) TIGHT 0.0001 (0.002) TIGHT	0.0012 (0.030) TIGHT 0.0001 (0.002) TIGHT	0.0012 (0.030) TIGHT 0.0001 (0.002) TIGHT
BEARING I.D. INBOARD	1.3780 (35.000) 1.3775 (34.988)	1.7717 (45.000) 1.7712 (44.988)	2.1654 (55.000) 2.1648 (54.985)	2.5591 (65.000) 2.5585 (64.985)
FRAME I.D. INBOARD	2.8346 (72.000) 2.8353 (71.987)	3.9370 (100.000) 3.9379 (100.022)	4.7244 (120.000) 4.7253 (120.022)	5.8118 (140.000) 5.5128 (140.025)
	0.0012 (0.032) LOOSE 0.0000 (0.000) LOOSE	0.0015 (0.037) LOOSE 0.0000 (0.000) LOOSE	0.0015 (0.037) LOOSE 0.0000 (0.000) LOOSE	0.0017 (0.043) LOOSE 0.0000 (0.000) LOOSE
BEARING O.D. INBOARD	2.8346 (72.000) 2.8341 (71.987)	3.9370 (100.000) 3.9364 (99.985)	4.7244 (120.000) 4.7238 (119.985)	5.8118 (140.000) 5.5111 (139.982)
SHAFT O.D. OUTBOARD	1.1815 (30.011) 1.1812 (30.002)	1.7722 (45.013) 1.7718 (45.002)	1.9690 (50.013) 1.9686 (50.002)	2.5597 (65.015) 2.5592 (65.002)
	0.0008 (0.021)TIGHT 0.0001 (0.002)TIGHT	0.0010 (0.025)TIGHT 0.0001 (0.002)TIGHT	0.0010 (0.025)TIGHT 0.0001 (0.002)TIGHT	0.0012 (0.030)TIGHT 0.0001 (0.002)TIGHT
BEARING I.D. OUTBOARD	1.1811 (30.00) 1.1807 (29.990)	1.7717 (45.000) 1.7712 (44.002)	1.9685 (50.000) 1.9680 (49.988)	2.5591 (65.000) 2.5585 (64.985)
HOUSING I.D. OUTBOARD	2.8346 (72.000) 2.8353 (72.019)	3.9370 (100.000) 3.9379 (100.022)	4.3307 (110.000) 4.3316 (110.022)	5.5118 (140.000) 5.5128 (140.025)
	0.0012 (0.032) LOOSE 0.0000 (0.000) LOOSE	0.0015 (0.037) LOOSE 0.0000 (0.000) LOOSE	0.0015 (0.037) LOOSE 0.0000 (0.000) LOOSE	0.0017 (0.043) LOOSE 0.0000 (0.000) LOOSE
BEARING O.D. OUTBOARD	2.8346 (72.000) 2.8341 (71.987)	3.9370 (100.000) 3.9364 (99.985)	4.3307 (110.000) 4.3301 (109.985)	5.8118 (140.000) 5.5111 (139.982)

IMPELLER BALANCE CRITERIA (ISO G6.3)

0.011 oz.in/lb. @ 3600RPM
18 g-mm/kg @ 3600RPM

INDICATOR CHECKS

- ✓ Impeller Vane Runout – 0.005 in. T.I.R. Max.
- ✓ Shaft Straightness – 0.0005 in. T.I.R. Max.
- ✓ Shaft Runout – 0.002 in. T.I.R Max.
- ✓ Stuffing Box Runout – 0.005 in. T.I.R. Max.

TORQUE VALUES

MAGNATEX 3575 SERIES TORQUE VALUES			
Location		**Lubricates Threads**	**Dry Threads**
(370)Casing bolts	6” 3575S	30FT-LBS (40 N·m)	45FT-LBS (60 N·m)
	8” 3575S	20FT-LBS (27 N·m)	30FT-LBS (40 N·m)
	3575L, 3575M	30FT-LBS (40 N·m)	45FT-LBS (60 N·m)
	3575XL	30FT-LBS (40 N·m)	45FT-LBS (60 N·m)
(370B) Frame to Adapter Bolts		20FT-LBS (27 N·m)	30FT-LBS (40 N·m)
Bearing Clamp ring Bolts	3575S, 3575M	10IN-LBS (1.1 N·m)	17IN-LBS (1.9 N·m)
(236A) Duplex bearing only	3575L	55IN-LBS (6.2 N·m)	83IN-LBS (9.4 N·m)
(371C) Bearing End Covers	3575XL	9FT-LBS (12 N·m)	12FT-LBS (16 N·m)
(265) Dynamic Seal Cap Screw	3575S, 3575M, 3575L	55IN-LBS (6.2 N·m)	83IN-LBS (9.4 N·m)
	3575XL	9FT-LBS (12 N·m)	12FT-LBS (16 N·m)

Magnatex Pumps, Inc.

“Since 1985 your process reliability has been our #1 priority.”

	MAXP Series ANSI **(Magnetic Drive)** Max. Flow: 2000 gpm Max. Head: 470 feet Temperature: -150°F to 800°F Max. Power: 200 hp Materials of Construction: Carbon Steel 304 & 316 Stainless Steel Alloy 20, Hastelloy® equivalent, Monel, Titanium	**3575 Series ANSI** **(Mechanical Seal)** Max. Flow: 5000 gpm Max. Head: 720 feet Temperature: up to 700°F Max. Power: 300 hp Materials of Construction: Ductile Iron, Steel, 316SS, CD4MCu, Alloy 20, Hastelloy® equivalent, Ni-Hard, Titanium	
	MP/MPL/MPH Series **Sub-ANSI / ANSI** **(Magnetic Drive)** Max. Flow: 340 gpm Max. Head: 400 feet TDH Temperature: -100° to 536°F Max. Power: 20 hp Materials of Construction: 316 SS, Alloy 20, Hastelloy® equivalent Bearings: SiC, SiC-X	**MPT Series** **(Magnetic Drive)** Max. Flow: 40 gpm Max. Head: 450 feet TDH Temperature: -40° to 445°F Max. Power: 20 hp Materials of Construction: 316 Stainless Steel Bearings: SiC-X	
	MMP Series **(Magnetic Drive)** Max. Flow: 20 gpm Max. Head: 95 feet Temperature: -100° to 536° F Max. Power: 3/4 hp Materials of Construction: 316 Stainless Steel Bearings: SiC-X Shaft: 316SS, SiC	**MEP Series** **(Magnetic Drive)** Max. Flow: 106 gpm Max. Head: 103 feet Max Temperature: 175° F Max. Power: 3 hp Materials of Construction: GF Polypropylene Bearings: C-PTFE, Carbon Shaft: Ceramic	
	MTA Series ANSI **(Magnetic Drive)** Max. Flow: 320 gpm Max. Head: 285 feet Temperature: 5° to 275°F Max. Power: 25 hp Materials of Construction: PFA Lined Bearings: C-PTFE, SiC Shaft: SiC	**ME Series** **(Magnetic Drive)** Max. Flow: 90 gpm Max. Head: 140 feet Temperature: 32° to 195° F Max. Power: 3 hp Materials of Construction: ETFE Lined PVDF Lined Bearings: C-PTFE, SiC; Shaft: Ceramic, SiC	
	S Series-Gear Pumps **(Mechanical Seal)** Max. Flow: 30 gpm Max. Head: 150 psi Max Temperature: 450° F Max. Power: 5 hp Casing Materials: 316SS, Hastelloy® equivalent, Ryton® Shaft Materials: 316SS, Hastelloy® Bearing Materials: Carbon, Teflon®, Rulon®	**SM Series-Gear Pumps** **(Magnetic Drive)** Max. Flow: 30 gpm Max. Head: 110 psi Max Temperature: 450° F Max. Power: 5 hp Casing Materials: 316SS, Hastelloy® equivalent, Ryton® Shaft Materials: 316SS,Hastelloy® Bearing Materials: Carbon, Teflon®, Rulon®	

Phone: 713-972-8666 **Fax: 713-972-8665**
inquiries@magnatexpumps.com **www.magnatexpumps.com**